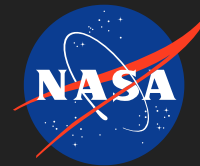


Miniaturized Lab-on-a-Chip Polarimeter, Phase I

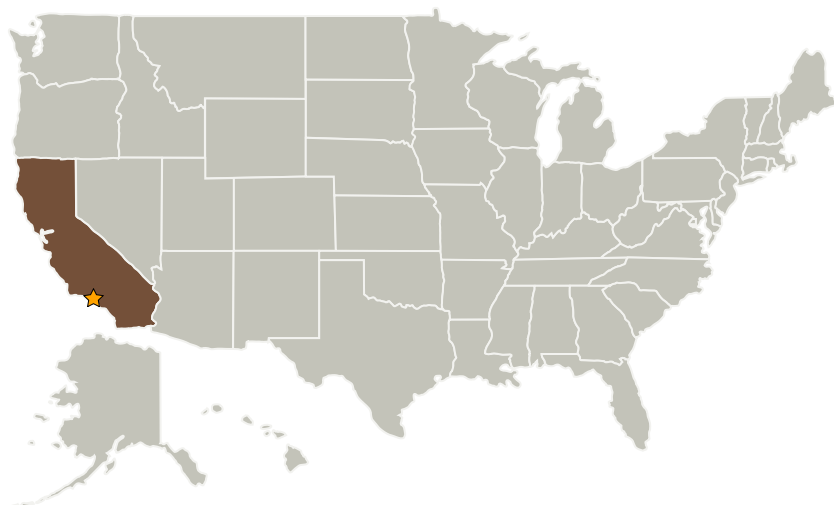
Completed Technology Project (2007 - 2007)



Project Introduction

Life on Earth is unique in many ways; one of its great mysteries is that all the biomolecules of Earth's life are chiral and non-racemic. In our pursuit of life on Mars and beyond, it is likely that one of the clues to extant or extinct life is non-racemic chiral molecules. This proposal describes the development of a highly miniaturized and ultrasensitive lab-on-a-chip polarimeter to determine the chirality of samples. This proposal is based on a novel technology to achieve the miniaturization and high sensitivity desired for this application. In Phase 1 of this project, we will design and construct the miniaturized polarimeter and develop the software to run the instrument. The polarimeter will be tested with representative samples and with plans to integrate the device to the Mars Organic Analyzer that is being developed at the University of California, Berkeley. In Phase 2 we will carry out the optimization and ruggedization of the device for space-use and will carry out additional testing and integration to the Mars Organic Analyzer.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
★ Jet Propulsion Laboratory (JPL)	Lead Organization	NASA Center	Pasadena, California
Intelligent Optical Systems, Inc.	Supporting Organization	Industry	Torrance, California



Miniaturized Lab-on-a-Chip Polarimeter, Phase I

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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Jet Propulsion Laboratory (JPL)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Miniaturized Lab-on-a-Chip Polarimeter, Phase I

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Primary U.S. Work Locations

California

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX04 Robotic Systems
 - └ TX04.3 Manipulation
 - └ TX04.3.4 Sample Acquisition and Handling